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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/731,863

Applicant(s)

LEE, JAR-WHA

Examiner

Katherine A. Bareford

Art Unit

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) 22-33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 34-54 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

claims 1-21 are canceled

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☒ Interview Summary (PTO-413)
Paper No(s)/Mail Date. attached.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

1. The amendment of October 30, 2007 has been received and entered. With the entry of the amendment, claims 1-21 are canceled, claims 22-33 are withdrawn from consideration, and new claims 34-54 are pending for examination.

Election/Restrictions

2. This application contains claims 22-33 drawn to an invention nonelected with traverse in the reply filed on May 1, 2007. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Specification

3. The objection to the specification as failing to provide proper antecedent basis for the claimed subject matter is withdrawn due to the cancellation of claims 17 and 19 in the amendment of October 30, 2007.

Claim Objections

4. Claims 51 and 54 are objected to because of the following informalities: (1) in claim 51, line 1, "further comprising" should be "further comprises" for correct

grammar. (2) in claim 54, line 3, "the treatment" should be "the treatment solution" for correct antecedent basis.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 34-51 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In new independent claim 34, in sections (b), (c), (d), (e) and (f), the claims provides achieving "a pre-determined amount of . . . agitation . . . with a roller . . .". However, a review of the disclosure as originally provided indicates that the described agitation comes from a source other than the roller. See paragraphs [0038] and [0041] (of the published application). Thus, claiming that the agitation occurs due to the roller is new matter. If applicant means that the agitation is present, but comes from a different source as described, then the claims are confusing as worded under 35 USC 112, second paragraph.

v/b In new independent claim 34, in section (c), reference is made to the use of "an ultrasonic water bath" and that the treatment provides "a substantially clean and wet exterior of each individual filament". However, a review of the disclosure as originally filed provides no basis for this amendment, as no mention is made of using any water bath or cleaning with such a bath. The specification, at paragraphs [0040] and [0042], for example, describes using a "bathing solution" in general.

The other dependent claims do not cure the defects of the claims from which they depend.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 34-54 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

New claim 34, section (a), provides that each processing cell has "a treatment solution reservoir" containing "a treatment solution". This is confusing as worded, because as described in sections (b)-(f) the different processing cells would contain different solution reservoirs and different treatment solutions to perform the different treatments, and as discussed with regard to various dependent claims below, it would

be unclear which specific treatment reservoirs or treatment solutions would be referred to by the terminology "a treatment solution reservoir" and "a treatment solution".

New claim 35, lines 1-2, refers to features of "the surface varied roller" but does not claim that "the surface varied roller" is used. This means that the features of the surface varied roller would not be required, when the alternate "contour varied roller" is used, which would mean that the material of the claim would be optional, and apparently not further limiting. For the purpose of examination, the Examiner is treating the claim as also requiring the use of the surface varied roller, however, the claim needs to be amended to reflect this position.

New claim 36, lines 1-2, refers to features of "the contour varied roller" but does not claim that "the contour varied roller" is used. This means that the features of the contour varied roller would not be required, when the alternate "surface varied roller" is used, which would mean that the material of the claim would be optional, and apparently not further limiting. For the purpose of examination, the Examiner is treating the claim as also requiring the use of the contour varied roller, however, the claim needs to be amended to reflect this position.

New claim 37, lines 1-2, refers to features of "the contour varied roller" but does not claim that "the contour varied roller" is used. This means that the features of the contour varied roller would not be required, when the alternate "surface varied roller" is used, which would mean that the material of the claim would be optional, and apparently not further limiting. For the purpose of examination, the Examiner is

treating the claim as also requiring the use of the contour varied roller, however, the claim needs to be amended to reflect this position.

New claim 38, lines 1-2, requires "the treatment solution" to not contain a surfactant, however, it is unclear if this means that "all" of the differing treatment solutions do not contain a surfactant or if any one or more, and if so, which ones, do not contain a surfactant. For the purpose of examination, the Examiner has treated the claim as requiring that any one of the treatment solutions to not contain a surfactant, however, the claim language should be clarified.

New claim 39, lines 1-4, requires agitating the yarn and "the treatment solution" with an ultrasonic system in communication with "the treatment solution reservoir", however, it is unclear if this means that "all" of the differing treatment solutions/reservoirs have ultrasonic systems, or if any one or more, and if so, which ones, have ultrasonic systems. For the purpose of examination, the Examiner has treated the claim as requiring that any one of the treatment solutions/reservoirs have ultrasonic systems, however, the claim language should be clarified.

New claim 40, lines 1-2 requires that "the treatment solution" is an acidic solution. However, it appears that this would only be referring to the solution of step (b) in claim 34 (which is acidic and etches), as the other steps do not appear to require or desire etching. However, it is unclear from the language if all or any one or more of the differing treatment solutions are also supposed to be acidic and etch. For the purposes of examination, the Examiner has treated the claim as referring to the solution of step

(b), however, the claim language should be clarified. The Examiner also notes that this means that the claim language of claim 40 is objected to as not further limiting of claim 34, as step (b) of claim 34 already requires all the features of claim 40.

New claim 41, lines 1-3, requires that the treatment solution is a "palladium salt solution". However, it appears that this would only be referring to the catalyzing solution of step (d) in claim 34 (which applies metal ions), as the other steps do not appear to require or desire such ion application. However, it is unclear from the language if all or any one or more of the differing treatment solutions are also supposed to have palladium and deposit palladium ions. For the purposes of examination, the Examiner has treated the claim as referring to the solution of step (d), however, the claim language should be clarified.

New claim 42, lines 1-3, requires that the treatment solution is a "alkaline sodium borohydride solution". However, it appears that this would only be referring to the reducing solution of step (e) in claim 34 (which reduces), as the other steps do not appear to require or desire such reducing. However, it is unclear from the language if all or any one or more of the differing treatment solutions are also supposed to alkaline sodium borohydride solutions and reduce. For the purposes of examination, the Examiner has treated the claim as referring to the solution of step (e), however, the claim language should be clarified.

New claim 43, line 1, "the bathing solution" lacks antecedent basis.

New claim 46, lines 1-2, refers to features of "aromatic heterocyclic rigid rod" but does not claim that " aromatic heterocyclic rigid rod " is actually used. This means that the features of the aromatic heterocyclic rigid rod would not be required, when the alternate "polyacrylnitrile" or ladder" polymers are used, which would mean that the material of the claim would be optional, and apparently not further limiting. For the purpose of examination, the Examiner is treating the claim as also requiring the use of the aromatic heterocyclic rigid rod, however, the claim needs to be amended to reflect this position.

New claim 47, lines 1-2, refers to features of "aromatic heterocyclic rigid rod" but does not claim that " aromatic heterocyclic rigid rod " is actually used. This means that the features of the aromatic heterocyclic rigid rod would not be required, when the alternate "polyacrylnitrile" or ladder" polymers are used, which would mean that the material of the claim would be optional, and apparently not further limiting. For the purpose of examination, the Examiner is treating the claim as also requiring the use of the aromatic heterocyclic rigid rod, however, the claim needs to be amended to reflect this position.

New claim 52, lines 1-2, "the apparatus comprising" should apparently be "the method comprising" as a method claim is described, and the flowing steps are method steps and it is unclear what apparatus is referred to. For the purpose of examination, the Examiner has treated the phrase as referring to "the method comprising".

New claim 53, line 1, "the step of removing at least a portion of the treatment solution" lacks antecedent basis, as no such removing step is described in parent claim 52.

New claim 53, line 2, "facilitating" is unclear as to what method step is actually required to "facilitate" or "help" or "aid" the described process.

The other dependent claims do not cure the defects of the claims from which they depend.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 52-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suganuma et al (US 2003/0224111).

Suganuma teaches a method for the treatment of individual filaments in a multifilament yarn. Paragraphs [0015] and [0024]. A multifilament yarn is passed through at least one treatment solution reservoir containing an amount of liquid treatment solution. Figure 1A and paragraph [0048] (note the size of the container

would control the amount of liquid). The reservoir has at least one sidewall and a bottom. Figure 1A and paragraph [0048]. The yarn is simultaneously passed across a yarn transfer system further comprising at least one roller having a roller profile variation that can be considered surface varied or contour varied configured to feed at least one yarn through the reservoir. Figure 1A, figure 2, and paragraphs [0049] – [0052] (note paragraph [0051] – the rollers have grooves, which would be a surface/contour variation). The roller disrupts the orientation of the individual filaments, exposing previously unexposed surface areas of each individual filament to the treatment solution. Paragraph [0024].

Claim 53: treatment solution is removed with the yarn as it is coated on the yarn. Paragraph 0043] (as with electroless plating). Furthermore, as this occurs a bottom to top and center to sides flow pattern of the treatment solution will occur. Figure 1A, paragraph [0052] (the movement of the guide rollers will agitate and cause flow of the liquid) as will the up and down movement of body 48 shown in figure 5 and paragraphs [0065]--[0067]

Claim 54: passing the yarn through the treatment solution includes passing the yarn through at least one yarn slot that allows continuous egress of treatment solution from the treatment reservoir. Figure 1A and paragraph [0048] (ports 9).

Suganuma does not teach that the amount of solution in the reservoirs are predetermined, however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Suganuma to perform routine

experimentation to determine the amount of solution to put in each reservoir before the coating process begins for efficient repeatability of the process because one of ordinary skill in the art would wish to place a desirable amount of solution into each reservoir so that the desired amount of immersion can occur without too little liquid being present or too much so that the liquid overflows undesirably.

11. Claims 34, 38-40, 42, 44, 48, 50 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nuzzi (US 3962494) in view of Suganuma et al (US 2003/0224111) and Iwami et al (US 3870551).

Nuzzi teaches that polymer materials and fibers can be electrolessly coated. Column 2, lines 30-40 and column 3, lines 10-15. Nuzzi provides a plurality of processing in the form of different baths, which would have specific amounts of different treating solutions. See for example, column 9, line 20 through column 10, line 15 (examples 2-3). Nuzzi provides that a first bath for treatment would be an acid solution to etch the substrate. Column 8, lines 1-15 and column 9, lines 35-45. Then a second bath for treatment would be a neutralizing (bathing) bath that would remove acid solution. Column 9, lines 45-47. Nuzzi also provides that another cleaning treatment can be provided after the neutralizing and before catalyzing can be a rinsing treatment. Column 9, lines 45-50. Nuzzi provides that rinsing is commonly done with water. Column 5, lines 25-35. A third bath for treatment in sequence would be a catalyzing solution to deposit metal ions. Column 2, lines 30-40 and column 9, lines 55-

65. A fourth bath for treatment in sequence would be reducing solution that reduces the metal ions on the substrate. Column 2, lines 30-40, column 9, line 65 through column 10, line 5 and column 11, lines 54-62. A fifth bath for treatment in sequence would be an electroless plating bath to apply a metal coating on the substrate. Column 10, lines 10-15 and column 9, lines 5-20.

Claim 38: Nuzzi provides that the neutralizing solution, rinsing (water) solution, catalyzing solution, and reduction solution can be made without surfactant. Column 9, lines 5-15, 45-47 and 55-56.

Claim 40: Nuzzi provides that the etching solution (step (b)) can be acidic. column 9, lines 35-45.

Claim 42, 50: the reduction solution for the fourth bath (step (e)) can be alkaline sodium borohydride. Column 11, lines 54-62.

Claim 51: after the electroless plating, the substrate can be electroplated. Column 6, lines 45-55.

Nuzzi teaches all the features of these claims except for (1) using a multifilament yarn as the substrate and using for each of the baths a specifically sized reservoir with a set amount of treatment solution each with a yarn transfer system that guides the ingress and egress of the yarn from the solution and disrupts the orientation of the filaments of the yarn to uniformly treat each of the filaments with a predetermined amount of tension and agitation by using the roller with roller profile variation (claim

34), (2) the plurality of polymeric filaments (claim 44), (3) the varying tension (claim 48), and (4) the ultrasonic agitation (claim 34, step (c), claim 39).

However, Suganuma teaches a method for the treatment of individual filaments in a multifilament yarn. Paragraphs [0015] and [0024]. The yarn can be a polymer.

Paragraph [0017]. A multifilament yarn is passed through multiple treatment solution

reservoirs containing ^{controlled}~~predetermined~~ amounts of liquid treatment solution. Figure 1A

and paragraphs [0020] and [0048] (note the size of the container would control the amount of liquid). The yarn is fed using yarn transfer systems that guide the yarn in

and out the reservoirs. Figure 1A and paragraphs [0048] – [0052]. The yarn transfer

system includes guide rollers having a roller profile variation that can be considered ^d~~surface~~ varied or contour varied configured to feed at least one yarn through the

reservoir. Figure 1A, figure 2, and paragraphs [0049] – [0052] (note paragraph [0051] –

the rollers have grooves, which would be a surface/contour variation). The roller feeds

the yarn and simultaneously disrupts the orientation of the individual filaments,

achieving a uniform treatment with the treatment liquid. Paragraph [0024]. The roller

achieves tension and agitation of the individual filament as the controlled movement of

the roller provides controlled times of tension and also will agitate the filaments.

Paragraph [0052]. The multiple treatment system can be used for pretreatment baths,

electroless baths, and electroplating. Paragraphs [0042] – [0044].

Iwami teaches that when using a treatment solution to apply metal to a multifilament yarn, it is well known to pass the material through a reservoir around

direction changing rollers. Figure 1 and column 2, lines 45-55. Furthermore, Iwami teaches to provide a ultrasonic oscillator in the tank reservoir, which agitates the yarn to separate the filaments and allow the solution to penetrate between the filaments by forcedly removing air present between the filaments. Column 1, lines 30-45 and column 2, lines 45-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nuzzi to use a bath system as described by Suganuma to desirably coat multifilament polymer yarns with a metal coating by electroless plating, by using a bath system as described by Suganuma for each of the treatment baths of Nuzzi, because Nuzzi teaches that polymer materials, including fibers, can desirably be coated by metal by using a multistep multibath electroless plating process, and Suganuma teaches that it is well known to be desirable to coat multifilament polymer yarns with materials such as metal and to provide a treatment solution bath system such that a specifically sized reservoir with a set amount of treatment solution with a yarn transfer system that guides the ingress and egress of the yarn from the solution is provided for the various steps and disrupts the orientation of the filaments of the yarn to uniformly treat each of the filaments to provide more uniform coating. It would have been obvious to use the bath and roller system of Suganuma to apply all the listed treatment solutions, including acid, neutralizing, rinsing with water, catalyzing, reducing and electroless, because the desire would be to treat all of the filaments with each treatment solution, so that the resulting metal plating from the electroless solution

is applied to each filament (each of which has been prepared to fully accept the electroless plating). When using the roller system of Suganuma, the roller will be provided provided with a roller profile variation in the form of a surface/contour varied roller as Suganuma teaches the use of such a roller. As to the specific size of each reservoir and amount of material in each, and the tension and agitation (at least some is provided by the movement of the yarn into and out of the baths) of the systems for each bath, it would have been obvious to one of ordinary skill in the art to optimize these conditions because Nuzzi teaches different exposure time of the material to each bath (see column 9, line 20 through column 10, line 15, for example), and the size of the reservoir, amount of material in the reservoir and the speed of the system would be optimized based on these exposure needs. Similarly, the tension and agitation would be coordinated with the speed, as Suganuma requires the roller movement actions that adjust tension on the yarn and the speed of pulling of the yarn is also well known to affect the coating amounts applied, and therefore one of ordinary skill in the art would perform routine experimentation to optimize the speed and tension on the yarn (note also Suganuma at paragraph [0052]), and the agitation, based on the conditions of movement of the roller, would also resultingly be optimized. It would further have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nuzzi in view of Suganuma to further use an ultrasonic treatment of the yarn and solution as described by Iwami in order to provide a desirable coating to all the filaments of a yarn because Nuzzi in view of Suganuma teaches a method of passing

yarn through various treatment baths using rollers so that all filaments are coated, and Iwami teaches that filaments of a yarn passing through solution to be coating can further desirably be spread so that all filaments can be coated by removing air through the use of an ultrasonic energy treatment.

12. Claims 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nuzzi in view of Suganuma and Iwami as applied to claims 34, 38-40, 42, 44, 48, 50 and 51 above, and further in view of SU 703150 (hereinafter '150).

Nuzzi in view of Suganuma and Iwami teaches all the features of these claims except the roller surface features.

However, '150 teaches that when providing guide rollers to guide materials through a bath, to help ensure through and even distribution of coating, it is well known to fit the guide rollers with cylindrical covers (which would read on gloves). Abstract and figures. These covers would change the surface profile to be varied and contoured, see the figures, as they would provide sections of different texture and protrusion which would provide relatively gripping/non-gripping sections and "yarn fingers" as protrusions. see the figures.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nuzzi in view of Suganuma to further use cylindrical cover sections on the rollers as described by '150 in order to provide a desirable coating because Nuzzi in view of Suganuma and Iwami teaches a method of electrolessly

plating multifilament polymer yarns with desired treatment of all yarns with a grooved roller, and '150 teaches that it is well known to desire to provide cylindrical cover sections on guide rollers, which provide large groove shapes, to help increase permeation of bath material. As discussed with regard to '150 above, these cylindrical cover section would read on the claimed relatively gripping/non-gripping sections, roller gloves, and "yarn fingers" as protrusions.

13. Claims 41, 43 and 49 rejected under 35 U.S.C. 103(a) as being unpatentable over Nuzzi in view of Suganuma and Iwami as applied to claims 34, 38-40, 42, 44, 48, 50 and 51 above, and further in view of Mallory et al (US 3674550).

Nuzzi in view of Suganuma and Iwami teaches all the features of these claims except the acid solution being free of surfactant (claim 43) and the catalyzing solution being a palladium salt solution (claim 41, 49). Nuzzi provides that the bathing (neutralizing) solution, rinsing (water) solution, catalyzing solution and reduction solution can be made without surfactant. See column 9, lines 5-15, 45-47 and 55-65. Suganuma provides the known use of a palladium salt solution for catalyzing. Paragraph [0086].

Mallory teaches that polymer materials can be electrolessly coated. Column 1, lines 10-30. Prior to electroless coating, Mallory teaches that it is well known to treat polymer materials with an acid bath to etch. Column 2, line 60 through column 3, line 5, and column 4, line 75 through column 5, line 2. The acid is described as merely a

cleaner containing 10% HCl, with no description of any surfactant required. Column 5, lines 1-2. Mallory further teaches immersing the substrate in a palladium salt bath to deposit palladium ions on the substrate. Column 3, lines 15-30, column 5, lines 5-11 and column 3, line 73 through column 4, line 10. Then, the substrate is treated in an alkaline reducing agent bath, such as alkaline sodium borohydride solution to reduce the deposited palladium ions to form a coating of palladium on the surface. Column 3, lines 25-45 and column 5, lines 10-20. Then electroless plating occurs. Column 3, lines 45-70 and column 5, lines 20-40.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nuzzi in view of Suganuma and Iwami to further use an acid solution without surfactant as described by Mallory in order to provide a desirable coating to all the filaments of a yarn because Nuzzi in view of Suganuma and Iwami teaches a pretreatment of acid etching, and Mallory indicates that for pretreatment acid etching before electroless plating, all that is needed is a 10% HCl solution. Furthermore, it would have been obvious to modify Nuzzi in view of Suganuma and Iwami to further use a catalyzing solution of palladium salt followed by sodium borohydride reducing before electroless plating as suggested by Mallory in order to provide a desirable coating to all the filaments of the yarn, because Mallory teaches that when electroless plating, it is well known to provide palladium salt catalyzing baths followed by sodium borohydride reducing to prepare the surface for electroless plating.

14. Claims 45 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nuzzi in view of Suganuma and Iwami as applied to claims 34, 38-40, 42, 44, 48, 50 and 51 above, and further in view of Wang (US 6228922).

Nuzzi in view of Suganuma and Iwami teaches all the features of these claims except the use of aromatic heterocyclic rigid rod filaments of PBO.

Wang teaches that it is well known to desire to provide metal coating to fibers made from PBO (poly (p-phenylene benzobisoxazole)). Column 2, lines 1-30. The fibers are rigid-rod polymers. Column 3, lines 25-30.

The Examiner takes Official Notice that PBO is a known aromatic-heterocyclic rigid rod polymer. If applicant disagrees, they should so respond on the record.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nuzzi in view of Suganuma and Iwami to further use polymer yarns made from PBO (which are aromatic heterocyclic rigid rod polymers) fibers as described by Wang in order to provide a desirable coating because Nuzzi in view of Suganuma and Iwami teaches a method of electrolessly plating multifilament polymer yarns, and Wang teaches that it is well known to desire to metal coat PBO fibers.

15. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nuzzi in view of Suganuma and Iwami as applied to claims 34, 38-40, 42, 44, 48, 50 and 51 above, and further in view of Hsu (US 5422142).

Nuzzi in view of Suganuma and Iwami teaches all the features of these claims except the use of aromatic heterocyclic rigid rod filaments.

Hsu teaches that it is well known to desire to electrolessly plate fibers made from PPTA (poly (p-phenylene terephthalamide)). Column 3, line 10 through column 4, line 45.

The Examiner takes Official Notice that PPTA is a known aromatic-heterocyclic rigid rod polymer. As applicant has not traversed this statement, first made in the Office Action of June 4, 2007, it is understood to be admitted prior art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nuzzi in view of Suganuma and Iwami to further use polymer yarns made from PPTA (which are aromatic heterocyclic rigid rod polymers) fibers as described by Hsu in order to provide a desirable coating because Nuzzi in view of Suganuma and Iwami teaches a method of electrolessly plating multifilament polymer yarns, and Hsu teaches that it is well known to desire to electrolessly plate PPTA fibers.

16. Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nuzzi in view of Suganuma, Iwami and Hsu as applied to claim 45 above, and further in view of Chiou (US 2003/0129900).

Nuzzi in view of Suganuma, Iwami and Hsu teaches all the features of these claims except the use of aromatic heterocyclic rigid rod filaments.

Chiou teaches the well known use of fibers made from PPTA (or PPD-T) (poly (p-phenylene terephthalamide)) and poly{2,6-diimidaazo[4,5-b4',5'-e]pyridinylene-1,4,(2,5-dihydroxy)phenylene} (PIPD) for similar purposes. Paragraphs [0033]-[0036].

The Examiner takes Official Notice that PIPD is a known aromatic-heterocyclic rigid rod polymer. If applicant disagrees, they should so respond on the record.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nuzzi in view of Suganuma, Iwami and Hsu to further use polymer yarns made from PIPD (which are aromatic heterocyclic rigid rod polymers) fibers as described by Chiou in order to provide a desirable coating because Nuzzi in view of Suganuma, Iwami and Hsu teaches a method of electrolessly plating multifilament polymer yarns of PPTA, and Chiou teaches that it is well known to use PIPD for similar purposes to PPTA.

17. Claims 34, 38-40, 42, 44, 48, 50 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nuzzi (US 3962494) in view of Clayton et al (US 3460978), Bach et al (US 5528799) and Iwami et al (US 3870551).

Nuzzi teaches that polymer materials and fibers can be electrolessly coated. Column 2, lines 30-40 and column 3, lines 10-15. Nuzzi provides a plurality of processing in the form of different baths, which would have specific amounts of different treating solutions. See for example, column 9, line 20 through column 10, line 15 (examples 2-3). Nuzzi provides that a first bath for treatment would be an acid

solution to etch the substrate. Column 8, lines 1-15 and column 9, lines 35-45. Then a second bath for treatment would be a neutralizing (bathing) bath that would remove acid solution. Column 9, lines 45-47. Nuzzi also provides that another cleaning treatment can be provided after the neutralizing and before catalyzing can be a rinsing treatment. Column 9, lines 45-50. Nuzzi provides that rinsing is commonly done with water. Column 5, lines 25-35. A third bath for treatment in sequence would be a catalyzing solution to deposit metal ions. Column 2, lines 30-40 and column 9, lines 55-65. A fourth bath for treatment in sequence would be reducing solution that reduces the metal ions on the substrate. Column 2, lines 30-40, column 9, line 65 through column 10, line 5 and column 11, lines 54-62. A fifth bath for treatment in sequence would be an electroless plating bath to apply a metal coating on the substrate. Column 10, lines 10-15 and column 9, lines 5-20.

Claim 38: Nuzzi provides that the neutralizing solution, rinsing (water) solution, catalyzing solution, and reduction solution can be made without surfactant. Column 9, lines 5-15, 45-47 and 55-56.

Claim 40: Nuzzi provides that the etching solution (step (b)) can be acidic. column 9, lines 35-45.

Claim 42, 50: the reduction solution for the fourth bath (step (e)) can be alkaline sodium borohydride. Column 11, lines 54-62.

Claim 51: after the electroless plating, the substrate can be electroplated. Column 6, lines 45-55.

Nuzzi teaches all the features of these claims except for (1) using a multifilament yarn as the substrate and using for each of the baths a specifically sized reservoir with a set amount of treatment solution each with a yarn transfer system that guides the ingress and egress of the yarn from the solution and disrupts the orientation of the filaments of the yarn to uniformly treat each of the filaments with a predetermined amount of tension and agitation by using the roller with roller profile variation (claim 34), (2) the plurality of polymeric filaments (claim 44), (3) the varying tension (claim 48), and (4) the ultrasonic agitation (claim 34, step (c), claim 39).

However, Clayton teaches a method of treating the surfaces of individual filaments in a multifilament yarn (strand). Figures 1-2 and column 1, lines 10-40. The yarn is immersed into a liquid treatment solution and the exposed surface areas of the individual filaments will be coated with the treatment solution. Figures 1-2 and column 1, lines 25-70. Clayton further teaches disrupting the orientation of the individual filaments (by changing the direction of the yarn movement) and coating all newly exposed surface areas of each individual filament with the treatment solution. Figures 1-2 and column 1, lines 25-70. The disrupting step is repeated a number of times by repeated direction changes to the yarn. Figure 2 and column 1, lines 64-70. Then the yarn is withdrawn from the treatment solution. Figures 1-2 and column 2, lines 20-40. The treatment of all the filaments prevents inter-filament chaffing by surrounding the individual filaments with the coating composition. Column 1, lines 30-35. The yarn can be made of various materials including glass and polymers such as nylon and Orlon.

Column 1, lines 70-72. Any type of coating can be applied, including resin, metal, sizings, etc. Column 1, line 70 through column 2, line 3. As shown in figures 1-2, each bath would have a set size.

Bach teaches that rollers used to guide fiber material can have a desirable grip release structure when the surface provide includes an average roughness Rz or 15 to 25 microns, which means that the roller has a surface varied profile. Column 1, lines 5-35, column 2, lines 55-65, column 5, lines 30-50 and column 6, lines 15-40.

Iwami teaches that when using a treatment solution to apply metal to a multifilament yarn, it is well known to pass the material through a reservoir around direction changing rollers. Figure 1 and column 2, lines 45-55. Furthermore, Iwami teaches to provide a ultrasonic oscillator in the tank reservoir, which agitates the yarn to separate the filaments and allow the solution to penetrate between the filaments by forcedly removing air present between the filaments. Column 1, lines 30-45 and column 2, lines 45-65.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nuzzi to use a bath system as described by Clayton to desirably coat multifilament polymer yarns with a metal coating by electroless plating, by using a bath as described by Clayton for each of the treatment baths of Nuzzi, because Nuzzi teaches that polymer materials, including fibers, can desirably be coated by metal by using a multistep multibath electroless plating process, and Clayton teaches that it is well known to be desirable to coat multifilament polymer yarns with materials

such as metal and to provide a treatment solution bath system such that a specifically sized reservoir with a set amount of treatment solution with a yarn transfer system that guides the ingress and egress of the yarn from the solution is provided and disrupts the orientation of the filaments of the yarn to uniformly treat each of the filaments so that inter-filament chaffing of the filaments in the yarn strand is prevented. It would have been obvious to use the bath and roller system of Clayton to apply all the listed treatment solutions, including acid, neutralizing, rinsing with water, catalyzing, reducing and electroless, because the desire would be to treat all of the filaments with each treatment solution, so that the resulting metal plating from the electroless solution is applied to each filament (each of which has been prepared to fully accept the electroless plating). It further would have been obvious to modify Nuzzi in view of Clayton to provide that the roller of Clayton is provided with a roller profile variation in the form of a surface varied roller as described by Bach in order to provide a desirable grip-release of the yarns on the roller, as Nuzzi in view of Clayton teaches to provide a roller transfer system to move multifilament yarn through baths, and Bach teaches that a roller with a certain amount of surface variation (such as roughness depth Rz of 15 to 25 microns) provides desirable grip-release of fibers being processed. As to the specific size of each reservoir and amount of material in each, and the tension and agitation (at least some is provided by the movement of the yarn into and out of the baths) of the systems for each bath, it would have been obvious to one of ordinary skill in the art to optimize these conditions because Nuzzi teaches different exposure time of

the material to each bath (see column 9, line 20 through column 10, line 15, for example), and the size of the reservoir, amount of material in the reservoir and the speed of the system would be optimized based on these exposure needs. Similarly, the tension and agitation would be coordinated with the speed, as Clayton requires the unrolling, passing and rewinding actions that would require some degree of tension on the yarn and the speed of pulling of the yarn is also well known to affect the coating amounts applied, and therefore one of ordinary skill in the art would perform routine experimentation to optimize the speed and tension on the yarn, and the agitation, based on the conditions of movement in and out of the bath, would also resultingly be optimized. It would further have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nuzzi in view of Clayton and Bach to further use an ultrasonic treatment of the yarn and solution as described by Iwami in order to provide a desirable coating to all the filaments of a yarn because Nuzzi in view of Clayton and Bach teaches a method of passing yarn through various treatment baths using rollers so that all filaments are coated, and Iwami teaches that filaments of a yarn passing through solution to be coating can further desirably be spread so that all filaments can be coated by removing air through the use of an ultrasonic energy treatment.

18. Claims 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nuzzi in view of Clayton, Bach and Iwami as applied to claims 34, 38-40, 42, 44, 48, 50 and 51 above, and further in view of SU 703150 (hereinafter '150).

Nuzzi in view of Clayton, Bach and Iwami teaches all the features of these claims except the roller surface features.

However, '150 teaches that when providing guide rollers to guide materials through a bath, to help ensure through and even distribution of coating, it is well known to fit the guide rollers with cylindrical covers (which would read on gloves). Abstract and figures. These covers would change the surface profile to be varied and contoured, see the figures, as they would provide sections of different texture and protrusion which would provide relatively gripping/non-gripping sections and "yarn fingers" as protrusions. see the figures.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nuzzi in view of Clayton, Bach and Iwami to further use cylindrical cover sections on the rollers as described by '150 in order to provide a desirable coating because Nuzzi in view of Clayton, Bach and Iwami teaches a method of electrolessly plating multifilament polymer yarns with desired treatment of all yarns, and '150 teaches that it is well known to desire to provide cylindrical cover sections on guide rollers to help increase permeation of bath material. As discussed with regard to '150 above, these cylindrical cover section would read on the claimed relatively gripping/non-gripping sections, roller gloves, and "yarn fingers" as protrusions.

19. Claims 41, 43 and 49 rejected under 35 U.S.C. 103(a) as being unpatentable over Nuzzi in view of Clayton, Bach and Iwami as applied to claims 34, 38-40, 42, 44, 48, 50 and 51 above, and further in view of Mallory et al (US 3674550).

Nuzzi in view of Clayton, Bach and Iwami teaches all the features of these claims except the acid solution being free of surfactant (claim 43) and the catalyzing solution being a palladium salt solution (claim 41, 49). Nuzzi provides that the bathing (neutralizing) solution, rinsing (water) solution, catalyzing solution and reduction solution can be made without surfactant. See column 9, lines 5-15, 45-47 and 55-65.

Mallory teaches that polymer materials can be electrolessly coated. Column 1, lines 10-30. Prior to electroless coating, Mallory teaches that it is well known to treat polymer materials with an acid bath to etch. Column 2, line 60 through column 3, line 5, and column 4, line 75 through column 5, line 2. The acid is described as merely a cleaner containing 10% HCl, with no description of any surfactant required. Column 5, lines 1-2. Mallory further teaches immersing the substrate in a palladium salt bath to deposit palladium ions on the substrate. Column 3, lines 15-30, column 5, lines 5-11 and column 3, line 73 through column 4, line 10. Then, the substrate is treated in an alkaline reducing agent bath, such as alkaline sodium borohydride solution to reduce the deposited palladium ions to form a coating of palladium on the surface. Column 3, lines 25-45 and column 5, lines 10-20. Then electroless plating occurs. Column 3, lines 45-70 and column 5, lines 20-40.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nuzzi in view of Clayton, Bach and Iwami to further use an acid solution without surfactant as described by Mallory in order to provide a desirable coating to all the filaments of a yarn because Nuzzi in view of Clayton, Bach and Iwami teaches a pretreatment of acid etching, and Mallory indicates that for pretreatment acid etching before electroless plating, all that is needed is a 10% HCl solution. Furthermore, it would have been obvious to modify Nuzzi in view of Clayton, Bach and Iwami to further use a catalyzing solution of palladium salt followed by sodium borohydride reducing before electroless plating as suggested by Mallory in order to provide a desirable coating to all the filaments of the yarn, because Mallory teaches that when electroless plating, it is well known to provide palladium salt catalyzing baths followed by sodium borohydride reducing to prepare the surface for electroless plating.

20. Claims 45 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nuzzi in view of Clayton, Bach and Iwami as applied to claims 34, 38-40, 42, 44, 48, 50 and 51 above, and further in view of Wang (US 6228922).

Nuzzi in view of Clayton, Bach and Iwami teaches all the features of these claims except the use of aromatic heterocyclic rigid rod filaments of PBO.

Wang teaches that it is well known to desire to provide metal coating to fibers made from PBO (poly (p-phenylene benzobisoxazole)). Column 2, lines 1-30. The fibers are rigid-rod polymers. Column 3, lines 25-30.

The Examiner takes Official Notice that PBO is a known aromatic-heterocyclic rigid rod polymer. If applicant disagrees, they should so respond on the record.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nuzzi in view of Clayton, Bach and Iwami to further use polymer yarns made from PBO (which are aromatic heterocyclic rigid rod polymers) fibers as described by Wang in order to provide a desirable coating because Nuzzi in view of Clayton, Bach and Iwami teaches a method of electrolessly plating multifilament polymer yarns, and Wang teaches that it is well known to desire to metal coat PBO fibers.

21. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nuzzi in view of Clayton, Bach and Iwami as applied to claims 34, 38-40, 42, 44, 48, 50 and 51 above, and further in view of Hsu (US 5422142).

Nuzzi in view of Clayton, Bach and Iwami teaches all the features of these claims except the use of aromatic heterocyclic rigid rod filaments.

Hsu teaches that it is well known to desire to electrolessly plate fibers made from PPTA (poly (p-phenylene terephthalamide)). Column 3, line 10 through column 4, line 45.

The Examiner takes Official Notice that PPTA is a known aromatic-heterocyclic rigid rod polymer. As applicant has not traversed this statement, first made in the Office Action of June 4, 2007, it is understood to be admitted prior art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nuzzi in view of Clayton, Bach and Iwami to further use polymer yarns made from PPTA (which are aromatic heterocyclic rigid rod polymers) fibers as described by Hsu in order to provide a desirable coating because Nuzzi in view of Clayton, Bach and Iwami teaches a method of electrolessly plating multifilament polymer yarns, and Hsu teaches that it is well known to desire to electrolessly plate PPTA fibers.

22. Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nuzzi in view of Clayton, Bach, Iwami and Hsu as applied to claim 45 above, and further in view of Chiou (US 2003/0129900).

Nuzzi in view of Clayton, Bach, Iwami and Hsu teaches all the features of these claims except the use of aromatic heterocyclic rigid rod filaments.

Chiou teaches the well known use of fibers made from PPTA (or PPD-T) (poly (p-phenylene terephthalamide)) and poly{2,6-diimidaazo[4,5-b4',5'-e]pyridinylene-1,4,(2,5-dihydroxy)phenylene} (PIPD) for similar purposes. Paragraphs [0033]-[0036].

The Examiner takes Official Notice that PIPD is a known aromatic-heterocyclic rigid rod polymer. If applicant disagrees, they should so respond on the record.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nuzzi in view of Clayton, Bach, Iwami and Hsu to further use polymer yarns made from PIPD (which are aromatic heterocyclic rigid rod polymers) fibers as described by Chiou in order to provide a desirable coating because Nuzzi in view of Clayton, Bach, Iwami and Hsu teaches a method of electrolessly plating multifilament polymer yarns of PPTA, and Chiou teaches that it is well known to use PIPD for similar purposes to PPTA.

23. Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Clayton et al (US 3460978) in view of Bach et al (US 5528799).

Clayton teaches a method of treating the surfaces of individual filaments in a multifilament yarn (strand). Figures 1-2 and column 1, lines 10-40. The yarn is passed through liquid treatment solution reservoir containing a predetermined amount of a liquid treatment solution and the exposed surfaces areas of the individual filaments will be coated with the treatment solution. Figures 1-2 and column 1, lines 25-70. The reservoir has at least one sidewall and a bottom. Figures 1-2 and column 2, lines 20-30 (the tank would be a set size with sidewalls and bottom to hold the liquid as shown, and the amount would predetermined to contact the rollers as shown). Clayton further teaches disrupting the orientation of the individual filaments (by changing the direction of the yarn movement) and coating all newly exposed surface areas of each individual filament with the treatment solution by passing the yarn across a yarn transfer system

further comprising at least one roller that feeds the yarn through the reservoir. Figures 1-2 and column 1, lines 25-70.

Clayton does not teach that the roller profile is either a surface varied roller or a contour varied roller.

However, Bach teaches that rollers used to guide fiber material can have a desirable grip release structure when the surface provide includes an average roughness Rz or 15 to 25 microns, which means that the roller has a surface varied profile. Column 1, lines 5-35, column 2, lines 55-65, column 5, lines 30-50 and column 6, lines 15-40.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Clayton to use a roller with a surface varied profile as described by Bach in order to provide a desirable grip-release of the yarns on the roller, as Clayton teaches to provide a roller transfer system to move multifilament yarn through a bath, and Bach teaches that a roller with a certain amount of surface variation (such as roughness depth Rz of 15 to 25 microns) provides desirable grip-release of fibers being processed.

24. The rejection of claim 1 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Clayton et al (US 3460978) is withdrawn due to the cancellation of claim 1 in the amendment of October 30, 2007.

25. The rejection of claim 5 under 35 U.S.C. 103(a) as being unpatentable over Clayton et al (US 3460978) is withdrawn due to the cancellation of claim 5 in the amendment of October 30, 2007.

26. The rejection of claims 2, 6, 7 and 10 under 35 U.S.C. 103(a) as being unpatentable over Clayton as applied to claim 1 above, and further in view of Suzuki et al (US 4086374) is withdrawn due to the cancellation of the claims in the amendment of October 30, 2007.

27. The rejection of claims 3 and 4 under 35 U.S.C. 103(a) as being unpatentable over Clayton as applied to claim 1 above, and further in view of Iwami et al (US 3870551) is withdrawn due to the cancellation of these claims in the amendment of October 30, 2007.

28. The rejection of claim 8 under 35 U.S.C. 103(a) as being unpatentable over Clayton in view of Suzuki as applied to claims 2, 6, 7 and 10 above, and further in view of Iwami et al (US 3870551) is withdrawn due to the cancellation of this claim in the amendment of October 30, 2007.

29. The rejection of claim 9 under 35 U.S.C. 103(a) as being unpatentable over Clayton in view of Suzuki as applied to claims 2, 6, 7 and 10 above, and further in view

of Nuzzi (US 3692494) is withdrawn due to the cancellation of claim 9 in the amendment of October 30, 2007.

30. The rejection of claims 9 and 11 under 35 U.S.C. 103(a) as being unpatentable over Clayton in view of Suzuki as applied to claims 2, 6, 7 and 10 above, and further in view of Mallory (US 3674550) is withdrawn due to the cancellation of these claims in the amendment of October 30, 2007.

31. The rejection of claims 12, 15, 18, 19 and 21 under 35 U.S.C. 103(a) as being unpatentable over Nuzzi (US 3962494) in view of Clayton et al (US 3460978) is withdrawn due to the cancellation of these claims in the amendment of October 30, 2007.

32. The rejection of claim 14 under 35 U.S.C. 103(a) as being unpatentable over Nuzzi in view of Clayton as applied to claims 12, 15, 18, 19 and 21 above, and further in view of Iwami et al (US 3870551) is withdrawn due to the cancellation of claim 14 in the amendment of October 30, 2007.

33. The rejection of claims 16 and 17 under 35 U.S.C. 103(a) as being unpatentable over Nuzzi in view of Clayton as applied to claims 12, 15, 18, 19 and 21 above, and

further in view of Hsu (US 5422142) is withdrawn due to the cancellation of these claims in the amendment of October 30, 2007.

34. The rejection of claims 13 and 20 under 35 U.S.C. 103(a) as being unpatentable over Nuzzi in view of Clayton as applied to claims 12, 15, 18, 19 and 21 above, and further in view of Mallory et al (US 3674550) is withdrawn due to the cancellation of these claims in the amendment of October 30, 2007.

Response to Arguments

35. Applicant's arguments with respect to claims 34-54 have been considered but are moot in view of the new ground(s) of rejection.

The references to Sukanuma and Bach have been used as to the newly claimed features of the independent claims. Also note the new references to SU 7093150, Wang and Chiou as to various new features of the dependent claims.

As to applicant's argument that as to the use of tension in Clayton, while it might be obvious to perform routine experimentation to optimize the speed and tension in the yarn, the instant invention does not require any predetermined relationship between speed and tension, the Examiner notes that the present invention does not prevent it either, only requiring a predetermined amount of tension achieved using a roller of the desired shape.

Conclusion

36. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


37. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.

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Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


KATHERINE BAREFORD
PRIMARY EXAMINER